

US ARMY TANK-AUTOMOTIVE COMMAND
BATTLEFIELD MAINTENANCE SYSTEMS
PERFORMANCE DESCRIPTION
LOADER, SKID STEER,
1500 LBS RATED OPERATING CAPACITY

1. Scope. This performance description describes the requirement for a Skid Steer Loader (see 6.1.1) of no less than 1500 pounds rated operating capacity and required attachments.

2. Applicable documents.

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks.

FEDERAL

FED-STD-595 - Colors Used in Government Procurement

DEPARTMENT OF DEFENSE

MIL-STD-209	- Interface Standard for Lifting and Tiedown Provisions
MIL-STD-913	- Requirements for the Certification of Sling Loaded Military Equipment for External Transportation by Department of Defense Helicopters
MIL-STD-1366	- Interface Standard for Transportability Criteria
MIL-STD-1916	- DOD Preferred Methods for Acceptance of Product
MIL-DTL-83133	- Turbine Fuels, Aviation, Kerosene Types, NATO F-34 (JP-8), and NATO F-35, and JP-8+100

(Unless otherwise indicated, copies of the above specifications, standards, and handbooks are available from the Standardization Documents Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.1.2 Other Government documents, drawings and publications. The following Government documents, drawings, and publications form a part of this Performance Description to the extent specified herein.

COMMERCIAL ITEM DESCRIPTION

A-A-50271 - Plate, Identification

US DEPARTMENT OF LABOR, OCCUPATION SAFETY & HEALTH
ADMINISTRATION (OSHA)

- | | |
|------------------|--|
| 29 CFR Part 1910 | - Occupational Safety and Health Standards |
| 29 CFR Part 1926 | - Safety and Health Regulations for Construction |

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402-0001. Text of the OSHA standards is also available on the OSHA web site at http://www.osha-slc.gov/OshStd_toc/OSHA_Std_toc.html).

2.2 Other publications. The following document(s) form a part of this Performance Description to the extent specified herein. The issues of the document(s) which are indicated as DOD adopted shall be the issue listed in the edition of the DODISS and the supplement thereto current as of the date of this document.

AUTOMATIC IDENTIFICATION MANUFACTURERS

- | | |
|----------|---|
| AIM BC 1 | - Uniform Symbology Specification - Code 39 |
|----------|---|

(Application for copies should be addressed to the Automatic Identification Manufacturers, 634 Alpha Drive, Pittsburgh, Pennsylvania, 15238-2802. Documents can also be ordered at <http://www.aimusa.org>.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS

- | | |
|------------|--|
| ASTM D3951 | - Standard Practice for Commercial Packaging |
| ASTM D5486 | - Standard Specification for Pressure-Sensitive Tape for Packaging, Box Closure, and Sealing |

(Application for copies should be addressed to the ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959. Documents can also be ordered at <http://www.astm.org>.)

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

- | | |
|-----------|---|
| SAE J38 | - Lift Arm Support Devices for Loaders |
| SAE J115 | - Safety Signs |
| SAE J386 | - Operator Restraint System for Off-Road Work Machines |
| SAE J674 | - Safety Glazing Materials – Motor Vehicles and Motor Vehicle Equipment |
| SAE J732 | - Specification Definitions – Loaders |
| SAE J742 | - Capacity Rating – Loader Bucket |
| SAE J818 | - Rated Operating Load for Loaders |
| SAE J833 | - Human Physical Dimensions |
| SAE J1040 | - Performance Criteria for Rollover Protective Structures (ROPS) for Construction, Earthmoving, Forestry, and Mining Machines |
| SAE J1388 | - Personnel Protection – Skid Steer Loaders |

SAE J 1446	- On-Machine Alarm Test and Evaluation Procedure for Construction and General Purpose Industrial Machinery
SAE J2513	- Earthmoving Machinery – Coupling of Attachments to Skid Steer Loaders
SAE J/ISO 3449	- Earthmoving Machinery - Falling-Object Protective Structures - Laboratory Tests and Performance Requirements
SAE J/ISO 3450	- Earthmoving Machinery—Braking Systems of Rubber-tired Machines—Systems and Performance Requirements and Test Procedures

(Application for copies should be addressed to the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096. Documents can also be ordered at <http://www.sae.org>.)

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

ISO 3411	- Earth-Moving Machinery - Human Physical Dimensions of Operators and Minimum Operator Space Envelope
ISO 3450	- Earth-Moving Machinery - Braking Systems of Rubber-Tyred Machines - Systems and Performance Requirements and Test Procedures
ISO 3471	- Earth-moving machinery – Roll-over protective structures – Laboratory tests and performance requirements
ISO 5006-1	- Earth-Moving Machinery - Operator's Field of View - Part 1: Test Method
ISO 5006-2	- Earth-Moving Machinery - Operator's Field of View - Part 2: Evaluation Method
ISO 5006-3	- Earth-Moving Machinery - Operator's Field of View - Part 3: Criteria
ISO 6405-1	- Earth-Moving Machinery - Symbols for Operator Controls and Other Displays - Part 1: Common Symbols
ISO 6405-2	- Earth-Moving Machinery - Symbols for Operator Controls and Other Displays - Part 2: Specific Symbols for Machines, Equipment and Accessories
ISO 6683	- Earth-Moving Machinery - Seat Belts and Seat Belt Anchorages
ISO 6746	- Earth-moving machinery – Definitions of dimensions and symbols
ISO 7131	- Earth-moving machinery – Loaders – Terminology and commercial specifications
ISO 7546	- Earth-moving Machinery – Loader and Front Loading Excavator Buckets – Volumetric Ratings
ISO 8313	- Earth-Moving Machinery - Loaders - Methods of Measuring Tool Forces and Tipping Loads
ISO 9244	- Earth-Moving Machinery - Safety Signs and Hazard Pictorials - General Principles

- ISO 9533 - Earth-Moving Machinery - Machine-Mounted Forward and Reverse Audible Warning Alarm - Sound Test Method
- ISO 10533 - Earth-moving machinery – Lift-arm support devices

(Application for copies of ISO documents should be addressed to the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.)

3. REQUIREMENTS.

3.1 Requirements. The loader shall be new, the manufacturer's current commercial production model, and shall conform to the requirements of Table 1. Refer to Figures 1 and 2 for an explanation of the requirement. When no requirement is given for a dimension, it is the manufacturer's option.

Table 1

SAE Rated Operating Load (kg) (with general purpose bucket)	No less than 1500 lbs (680)
SAE Tipping Rating (with general purpose bucket)	No less than 3000 lbs (1631)
Operating Weight (see 6.1.2)	No greater than 6500 lbs (2948)
Engine	Liquid-cooled diesel
Gross horsepower	No less than 42 hp (31 KW)
Fuel	No. 2 Diesel and JP-8 in accordance with MIL-DTL-83133
A. Overall Operating Height (fully raised)	
B. Height to Hinge Pin (fully raised)	No less than 109 inches (2769)
C. Overall Height (top of ROPS)	No greater than 78 inches (1981)
D. Ground Clearance to Chassis (between wheels)	No less than 7 inches (178)
E. Overall Length (with bucket)	
F. Overall Length (less bucket)	No greater than 105 inches (2667)
G. Wheel Base	
H. Dump Reach (at full height)	
I. Rollback at Ground	
J. Dump Angle (at full height)	
K. Overall Width (less bucket)	No more than 66 inches (1676)
L. Bucket Width	No less than 66 inches (1676) inside dimension
M. Clearance Circle (rear)	
N. Clearance Circle (less bucket)	
O. Clearance Circle (w/bucket)	
P. Seat to Ground Height	
Q. Rollback at Full Height	
R. Dump Height	
S. Departure Angle	
HYDRAULIC SYSTEM	
Auxiliary Hydraulics (L/m)	No less than 14 gpm (53) (see 3.1.1)

Travel Speed (kmh)

No less than 6 mph (9.7)

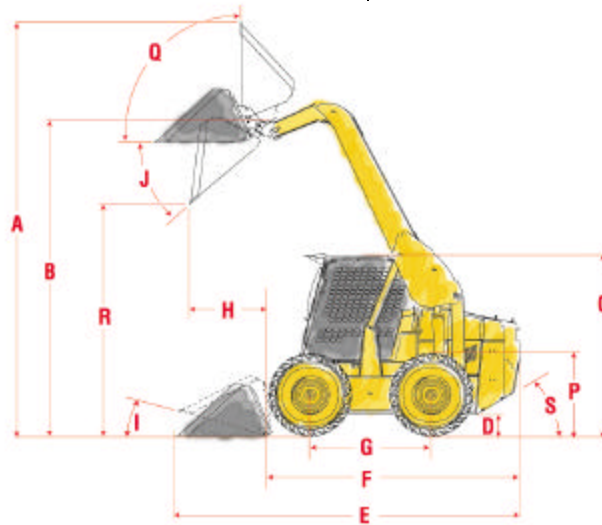


Figure 1

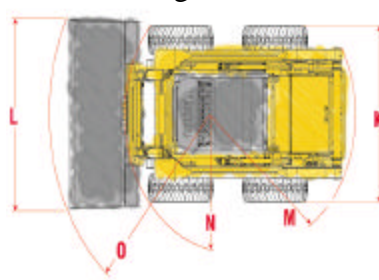


Figure 2

3.1.1 Hydraulic system. The skid steer loader hydraulic system used to power the attachments shall deliver no less than 14 gallons per minute (gpm). In addition, the hydraulic system shall be designed and have the pressure and capacity to power each of the attachments specified in paragraph 3.2. Smooth-faced quick-action hydraulic couplings that do not require the use of tools or special devices shall be used to connect the attachments to the loader hydraulic system. The couplings shall provide for automatic sealing of the fluid pressure on the upstream and downstream sides when the coupling is disconnected. There shall be a means to prevent inadvertent misconnection of the pressure and return lines.

3.1.2 Personnel Protection. The loader shall meet the requirements of SAE J1388 for personnel protection. The Roll-over Protective Structure (ROPS) shall meet the requirements of SAE J1040 or ISO 3471. The Falling-object Protective Structure (FOPS) shall meet the requirements of SAE/ISO J/ISO 3449. There shall be interlocks that prevent operation of the skid loader, movement of the lift arms, attachments, and drive system unless the operator is seated and either a safety bar is in place or the seat belt is buckled. Front and rear lights suitable for operation of the loader at night shall be provided. A back-up alarm and horn in accordance with SAE J1466 or ISO 9533 shall be provided. Operator restraint systems shall be in accordance with SAE J386 or ISO 6683.

3.1.3 Operator cab. The operator's cab and seat shall accommodate one operator ranging from the 5th percentile female soldier to the 95th percentile male soldier (see paragraphs 6.2 and 6.5) wearing heavy winter clothing, Load Bearing Equipment (LBE), gas mask and helmet. The operator's cab shall have a seat that shall be a fully adjustable suspension-type seat. The seat covering shall be easily cleaned and wiped dry, and shall withstand rain, snow, oils, automotive-type fluids and other liquids without absorbing them. An operator seat belt shall be provided. Operating parameter monitoring shall be done with gauges, not warning lights, except that warning lights may be used in conjunction with the gauges to call attention to operating parameters outside normal operating ranges. Symbols used on controls and other displays shall be in accordance with ISO 6405-1 and ISO 6405-2. The cab shall have a removable windshield, rear window, and top window for use with the breaker described in paragraph 3.2.1. The windows shall have safety glazing plastics conforming to SAE 674. The windshield shall have impact resistance greater than or equal to ½ inch thick polycarbonate. The top and rear window shall have impact resistance greater than or equal to ¼ inch thick polycarbonate. Operator's visibility shall be in accordance with ISO 5006-3 when tested and evaluated in accordance with ISO 5006-1 and ISO 5006-2.

3.1.4 Transportability. The loader shall meet the transportability requirements of MIL-STD-1366. The loader and attachments shall be capable of all modes of military transportation, except airdrop, including internal transport by C-130, C-141, C-5, and C-17 aircraft. The skid loader shall have lifting and tie down provisions conforming to MIL-STD-209. The contractor shall prepare a transportability report in accordance with Data Item Description DI-PACK-80880B. (See paragraph 6.4.) Submission of the transportability report shall be in accordance with the Contract Data Requirements List (CDRL).

3.1.4.1 Helicopter sling loading. The loader shall meet the requirements of MIL-STD-913 and MIL-STD-1366 and shall be certified for helicopter sling loading. With the furnished bucket attached and the tires filled with the prescribed tire filler (see 3.1.7), the loader shall be capable of single-point external helicopter air transport (helicopter sling loading) by CH-47 and UH-60 helicopters. The required mission profile shall be 30 nautical miles radius at 2000 feet, 70° F temperature. However, it is desired that the skid loader be able to meet the 4000 feet, 95°F mission profile. (See paragraph 6.6.)

3.1.4.2 Shipping Data Plate. A shipping data plate conforming to MIL-STD-209 shall be affixed to the skid loader. (See also 3.4). The data plates shall be attached by permanent suitable means in a location visible by a person standing on the ground adjacent to the vehicle. The data plate shall show the silhouette of the vehicle with attachments in transport position, indicating the center of gravity and location and capacity of the slinging and tiedown provisions.

3.1.5 Protective finish. The skid loader and attachments normally painted in industry practice shall be finished in lusterless green, color number 34094 of FED-STD-595. The finish and its application shall be in accordance with the best commercial practices of the construction equipment industry. No company logos or model number information except on the data plate is permitted on the exterior of the loader.

3.1.6 Lift arms. The skid loader shall have twin lift arms. If the lift arms are required to be held in the elevated position for maintenance, service, or purposes other than loader operation,

means to prevent the lift arms from accidentally lowering shall be provided. The lift arm support device shall conform to SAE J38 or ISO 10533.

3.1.7 Wheels and tires. Wheels shall be 10 x 16.5. Tires shall be no less than 8-ply rated and filled with polyurethane tire filler to increase puncture resistance. The polyurethane tire filler shall be non-settling and approximate air-filled tires.

3.1.8 Attachment bracket. The skid loader shall be equipped with an attachment bracket conforming to SAE J2513.

3.1.9 Safety and health requirements. In addition to the safety requirements of the applicable SAE and ISO standards, the skid loader shall comply with the general safety and health requirements promulgated under 29 CFR 1910 and 29 CFR 1926, OSHA Standards that are applicable to the skid loader. Safety devices shall be provided for all parts presenting safety hazards. Safety signs shall be in accordance with ISO 9244 or SAE J115. Braking systems shall conform to SAE J/ISO 3450 or ISO 3450.

3.2 Attachments. Each loader shall have the capability to utilize the attachments (separately purchased) in paragraphs 3.2.1 thru 3.2.4. All attachments shall couple to the skid loader attachment bracket conforming to SAE J2513. All attachments shall securely lock into place for operation and transport without requiring the use of tools. Attachments shall be furnished with all items required for operation, and hoses required to connect the attachment to the loader hydraulic system. Smooth-face quick-action hydraulic couplings that do not require the use of tools or special devices shall be used to connect the attachments to the loader hydraulic system. The couplings shall provide for automatic sealing of the fluid pressure on the upstream and downstream sides when the coupling is disconnected.

3.2.1 Breaker. The breaker shall be hydraulically powered from the loader's hydraulic system. The impact energy shall be no less than 300 lb-ft (407 joules) at the loader's rated hydraulic pressure and flow. The breaker shall be capable of no less than 900 blows per minute. Means to dampen hydraulic fluctuations shall be provided. The breaker shall be furnished with one each nail point, chisel point, asphalt cutter, tamping pad, and picket driving tool. Each tool shall be manufactured/forged from a single piece of material with no welds.

3.2.2 Earth auger. The earth auger, including extensions and bits, shall be able to bore 12-inch and 24-inch diameter holes, no less than 84 inches deep in frozen soils, coarse-grained soils, fine-grained soils, highly organic soils, clays, silt, gravel, and rocky soils. The auger shall be direct drive, be bi-directional, and be able to bore vertical holes while the loader is on side slopes of up to 10 degrees (18% grade). The auger shall also be capable of boring holes at any angle from vertical to horizontal.

3.2.2.1 Mounting. The earth auger shall mount in place of the loader bucket utilizing the attachment bracket of paragraph 3.1.8.

3.2.2.2 Output shaft. The output shaft that connects the hydraulic motor to the drill bit shall be a 2-inch hexagon. Bolts or pins required to connect the auger bit to the shaft shall be made captive to the earth auger drive unit. Mounting bolts or pins shall be installed and removed

utilizing the onboard tools. The auger drive unit shall be adaptable to fit round drive auger bits. The adapter shall be furnished.

3.2.2.3 Auger bits. The loader shall be furnished with auger bits and drive extensions sufficient to bore 12-inch and 24-inch diameter holes to an effective drilling depth of no less than 84 inches. The auger bits shall be of the double cutting type with replaceable cutting teeth and pilot bit(s). The bit shall be constructed with continuous fluting along the entire length of the drill bit. The bits shall contain a hex shaped connector in order to interface with the motor output shaft.

3.2.2.4 Cutting teeth. The auger drill bits shall be furnished with replaceable cutting teeth and pilot bit(s). Hard faced tungsten-carbide teeth shall be provided to allow for drilling in rocky or frozen soil. The teeth shall be secured to the auger bit by positive means that shall prevent the detachment of the teeth from the auger while it is rotating, boring, and retracting. The pilot bit shall be tri-fluted and be made of tungsten carbide or have tungsten-carbide teeth. Removal and replacement of teeth shall be accomplished using hand tools.

3.2.3 Combination Bucket. The loader bucket shall be a combination-type bucket with a clamshell. The clamshell shall open to allow objects no less than 30 inches thick, for example, a 30-inch diameter log, to be grasped. The jaws shall be toothed for better gripping. When the jaws are closed, the interior of the bucket shall be smooth. The bucket shall be furnished with no less than seven equally spaced Hensley-style bolt-on teeth. The bucket shall have a capacity of no less than 12 cubic feet (0.44 cubic yard) as measured in accordance with ISO 7546. All cutting edges shall be hardened to improve wear. All pivot points shall have grease-refillable wear bushings.

3.2.4 Pallet forks. The pallet fork arms shall be no less than 42-inches long. The pallet forks arms, when mounted on the loader, shall be capable of lifting loads to a height of no less than 105 inches. The pallet fork arms shall be able to support no less than 950 pounds at 24 inches from the frame. The fork arms shall be capable of being spread to no less than 44 inches measured to the outside of the fork arms and any distance along the frame. The frame shall be constructed to prevent loads from falling backward while still maintaining visibility of the load and fork arms. The pallet fork shall be a separate attachment; fork arms that attach to the bucket are not permitted. Each fork arm shall be permanently marked with the specified fork arm capacity, the specified load center distance, the fork arm manufacturer's identification, and the week and month and year of manufacture, or a serial number.

3.3 Tools and accessories. The skid loader shall be furnished with the following listed tools and accessory items. The tools shall be professional quality designed, manufactured, and marketed for constant, rigorous, industrial or construction environment use. Professional quality tools are used primarily by skilled professionals and technicians in such areas as machine shops, automotive maintenance and repair facilities, aircraft maintenance and repair facilities, industrial automotive assembly plants, fleet maintenance facilities, airline service facilities, indoor and outdoor construction sites, etc. The fire extinguisher shall be mounted in the cab of the skid loader so that it is readily accessible from outside ground level and does not interfere with the operator or skid loader operation. The tools shall be placed in the tool bag and stowed in the skid

loader cab. The tools and accessories shall be protected against damage and secured in the cab for shipping.

Name	Description	Qty
Fire extinguisher	Dry chemical, 2.7 pounds nominal capacity with vehicle mounting bracket. For electrical, oil, gas and flammable liquid fires.	1
Adjustable wrench	12-inch nominal size, 1-1/2 jaw opening, chromium plated.	1
Pliers	Slip-joint, 8-inch nominal length, cushioned grip, with wire cutters.	1
Hammer	2.5-pound head weight, double face, fiberglass handle with cushioned grip	1
Screwdriver, flat tip	1/4-inch wide blade width, 4-inch nominal blade length, round shank, cushioned grip	1
Screwdriver, cross-tip	#2 point, 4-inch long nominal blade length, round shank, cushioned grip.	1
Pry bar, lineup	Steel, 14 inches long by 1/2-inch diameter. One end tapered for aligning holes.	1
Grease gun	Lever operated. Rigid bent angle tube with coupler able to couple to standard grease fittings. For use with 14 oz. grease cartridge or bulk-loaded grease.	1
Safety goggles	Ventilated, with adjustable headband, one-piece single aperture for wearing over prescription glasses, flexible frame. Conforming to ANSI Z87.1.	2 pr
Headset, wireless communication	Noise Reduction Ratio (NRR) no less than 26dB. No less than 14 channels. An FCC license shall not be required. Hands-free operation. Adjustable sensitivity, voice-operated, and push-to-talk switch. Noise suppressing microphone. Range up to 2 miles. Operates from 9-volt battery. Peltor MT72H7A-460 or equal.	2 pr
Tool bag	The tool bag shall be large enough to hold the tools and accessories listed above except for the fire extinguisher. There shall be a carry handle(s). The bag shall be water-resistant, made of a ripstop material and reinforced at wear areas.	1

3.4 Identification marking. The skid loader and the attachments shall have permanently attached data plates conforming to A-A-50271. The skid loader data plate shall have no less than the following information:

- a. NSN: 3805-01-496-0377
- b. Nomenclature: LOADER, SCOOP TYPE
- c. Manufacturer
- d. Manufacturer's CAGE code
- e. Model number
- f. Serial number or vehicle identification number

- g. Date of manufacture.

The attachments' data plate shall contain at least the information contained in b through g above. The information on the skid loader data plate and the shipping data plate of paragraph 3.1.4.2 may be combined.

3.5 Product verification. When specified in the contract or purchase order, a skid steer loader shall be subject to product verification testing.

4. VERIFICATION

4.1 General provisions. The inspections (examinations and tests) herein shall be performed to determine whether the item conforms to Section 3 of this Performance Description.

4.1.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. Conformance inspection (see 4.4 through 4.15.6)
- b. Product verification (see 4.17)

4.1.2 Inspection conditions. Unless otherwise specified, all inspections shall be performed in accordance with the test conditions specified herein.

4.2 Certified test reports (CTR) format. When a CTR is approved (See 4.16), the contractor shall make available to the Government a CTR for each lot of parts, assemblies, subsystems and systems by lot number prior to acceptance. This test report is in addition to, and not in lieu of, any rights of the Government under this contract or law. A CTR may be used as an element incident to, but shall not be used as the sole basis for, Government acceptance of the contract item(s) unless so indicated in the technical documentation or contract. As a minimum, the report shall contain the following:

- a. Name of company and date.
- b. Contract number or purchase order number, national stock number and drawing number.
- c. Complete nomenclature of supplies together with lot number or other identification. The quantity in each lot or shipment shall be given.
- d. All inspections and tests required by contract (i.e., material, processes, performance, functional, etc.) shall be recorded in test reports. These reports shall identify each lot submitted for acceptance by lot number, the specification or drawing, revision and date, grade or type as applicable, number of specimens tested, specified characteristics and requirements, and actual results obtained.
- e. Reports of the raw material producer's chemical, mechanical, and physical analysis.
- f. A statement, as follows, certifying that material meets all requirements of the contract:

“The undersigned, individually, and as the authorized representative of the contractor, warrants and represents that: All the information supplied above is true and accurate; the material covered by this certificate conforms to all contract requirements (including but not limited to the drawings and specifications); the inspection and test results, and the analysis appearing herein are true and accurate; and this certificate is made for the purpose of inducing payment and with knowledge that the information and certification may be used as a basis for payment.”

- g. Signature and title of certifying official.

4.3 Certificate of conformance (COC) format. When COC is approved (See 4.16), a certificate of conformance is required for Military Standard and commercial items, supported by inspection and test data, material analysis, or certification from the raw material producer or processor, and shall be made available to the Government for specifications covering raw material, processed material, and processes. The contractor shall make the COC available to the Government prior to or with the request to perform acceptance inspection approval by the Government. This is in addition to, and not in lieu of, any rights of the Government under this contract or law. A COC may be used as an element incident to, but shall not be used as the sole basis for, Government acceptance of contract item(s) unless so indicated in the technical documentation or contract. As a minimum, the COC shall contain the following:

- a. Name of company and date.
- b. Contract number or purchase order number, national stock number and drawing number.
- c. Complete nomenclature of supplies together with lot number or other identification. The quantity in each lot or shipment shall be given.
- d. A statement certifying that material meets all requirements of the contract. The contractor shall furnish, to the cognizant engineering activity, a proposed statement for approval.

4.4 Conformance inspection

4.4.1 Compliance. Conformance inspection shall be applied to production units being offered for acceptance under the contract. These inspections shall include all verifications listed in paragraphs 4.5 through 4.15.6.

4.4.2 Inspection lot formation Lot formation shall be in accordance with Section 4 of MIL-STD-1916.

4.4.3 Sampling plan determination. Conformance verification methods are specified in paragraphs 4.5 through 4.15.6. When required by contract or cited herein, attribute-sampling inspections shall be conducted in accordance MIL-STD-1916 using Verification Level I.

4.4.4 Rejection. Failure of any unit to pass any verification shall be cause for rejection of the lot.

4.5 Operational performance. Verify that the loader conforms with the requirements of paragraph 3.1 including Table 1 and Figures 1 and 2.

4.6 Hydraulic system. Verify by demonstration and inspection that the hydraulic system conforms to the requirements of paragraph 3.1.1.

4.7 Personnel protection. Provide objective evidence that the loader meets the requirements of SAEJ1388 (Personnel Protection), SAEJ1040 or ISO3471 (Roll-over Protective Structure) and SAE J/ISO 3449 (Falling-object Protective Structure). Inspect the loader to determine that interlocks, safety bar, backup alarm and horn, front and rear lights for night operation and operator restraint systems are provided as specified in paragraph 3.1.2.

4.8 Operator cab. Examine the operator's cab and seat, parameter monitors and operator control symbols to verify compliance with the requirements of paragraph 3.1.3. Verify that the cab is provided with windshield and windows that conform with the pertinent portions of paragraph 3.1.3.including operator visibility requirements.

4.9 Transportability. Verify that the skid loader contains lifting and tie down provisions that meet the requirements of MIL-STD-209 for location, strength, clearance, and marking. Confirm that the skid loader conforms to the transportability requirements of Paragraphs 3.40, 3.41, 3.42, 3.43 and 3.44 of MIL-STD-1366. Further verify that the loader and attachments are capable of the modes of military transportation specified in paragraph 3.1.4.

4.9.1 Helicopter sling loading. Verify that the equipment utilized for single point sling loading of the loader with bucket attached is certified for external helicopter transport in accordance with MIL-STD-913. Demonstrate that the loader with bucket attached and the tires filled with the tire filler of paragraph 3.1.7 complies with the requirements of paragraphs 5.6.3 and 5.6.4 of MIL-STD-1366 for external transportation by CH-47and UH-60 helicopters using single point sling loading. Mission load capabilities for the demonstration shall be in accordance with Table 32 of MIL-STD-1366 at the 2000 ft.and 4000 ft.levels for both the CH-47 and UH-60 helicopters.

4.10 Protective finish. Confirm that the skid loader and attachments have a lusterless green protective finish that is in accordance with color number 34094 of FED-STD-595 and is free of extraneous data.

4.11 Lift arms. Verify that the skid loader contains twin lift arms and lift arm support that complies with the requirements of paragraph 3.1.6.

4.12 Wheels and tires. Examine the wheels and tires to determine compliance with paragraph 3.1.7.

4.13 Attachment bracket. Verify that the skid loader contains an attachment bracket that conforms to SAE J2513.

4.14 Safety and health requirements. Provide objective evidence that the skid loader complies with the safety and health requirements of paragraph 3.1.9. Examine the skid loader to verify that safety devices are provided for all parts that present safety hazards. Further examine the skid loader to confirm that safety signs and braking systems are provided as specified.

4.15 Attachments. Verify that each loader is capable of utilizing the attachments listed in paragraphs 3.2.1 through 3.2.4 which couple to the skid loader attachment bracket conforming to SAE J2513 and that lock in place without the use of tools. Further verify that the attachments are furnished with the items specified in paragraph 3.2 for connection to the loader hydraulic system.

4.15.1 Breaker. Verify by demonstration and inspection that the breaker and tools meet the requirements of paragraph 3.2.1.

4.15.2 Earth Auger. Demonstrate that the earth auger meets the requirements of paragraph 3.2.2.

4.15.2.1 Mounting. Demonstrate that the earth auger can be mounted per paragraph 3.2.2.1.

4.15.2.2 Output Shaft. Examine the output shaft to verify compliance with paragraph 3.2.2.2.

4.15.2.3 Auger Bits. Verify by demonstration and inspection that the auger bits comply with the requirements of paragraph 3.2.2.3.

4.15.2.4 Cutting Teeth. Confirm that the auger drill bits are furnished with replaceable cutting teeth and pilot bits that meet the requirements of paragraph 3.2.2.4.

4.15.3 Combination Bucket. Verify by demonstration, measurement and inspection that the loader bucket conforms with the requirements of paragraph 3.2.3.

4.15.4 Pallet Forks. Confirm by demonstration, examination and measurement that the pallet forks meet the requirements of paragraph 3.2.4.

4.15.5 Tools and Accessories. Certify that each skid loader is furnished with the Tools and Accessories listed in paragraph 3.3 and that all are of the quality and are mounted, packed, stowed, protected and secured as specified in paragraph 3.3.

4.15.6 Identification Marking. Locate the skid loader and attachments data plates and confirm that each plate conforms to A-A-50271. Verify that each plate is in a plainly visible area and contains the informational requirements of paragraph 3.4. Locate the shipping data plate and verify compliance with paragraph 3.1.4.2.

4.16 Waiver in lieu of inspection. When specified in the contract, the contractor may request, in writing, through the Procurement Contracting Officer (PCO), that the Government accept a COC and/or CTR in lieu of inspections and testing specified above. Supporting data shall be furnished for evaluation. The data shall include technical documentation and prior test results, including test methods. If proprietary information is furnished, the documents shall be

marked accordingly. Upon approval, the COC and CTR shall comply with the respective format, as specified above.

4.17 Product verification inspection.

4.17.1 Submission. The contractor shall submit a product verification sample as designated by the Contracting Officer for evaluation in accordance with the specified verification methods of paragraphs 4.5 through 4.5.16. The product verification sample shall consist of a minimum of one (1) skid steer loader.

4.17.2 Inspections to be performed. As determined by the Government, the product verification assemblies, components and test specimens may be subjected to any or all of the verification methods specified in paragraphs 4.5 through 4.15.6.

4.17.3 Rejection. If any test assemblies, test specimens or test components fail to comply with any of the applicable requirements, the product verification sample shall be rejected. The Government reserves the right to terminate inspection upon any failure of a test assembly, specimen or component to comply with any of the requirements.

5 PACKAGING AND PRESERVATION

5.1 Preservation, Packing and Packaging. Preservation, Packing and Packaging shall be in accordance with ASTM-D-3951 plus the following additional requirements.

5.2 Wood products. If oak or chestnut wood products are used in the performance of this contract, these wood or wood products must be free of all bark.

5.3 Heat treatment. All non-manufactured wood used in packaging shall be heat-treated to a core temperature of 56 degrees Celsius for a minimum of 30 minutes. The box/pallet manufacturer and the manufacturer of wood used as inner packaging shall be affiliated with an inspection agency accredited by the Board of Review of the American Lumber Standard Committee. Each box/pallet shall be marked to show the conformance to the International Plant Protection Convention Standard. Boxes/pallets and any wood used as inner packaging made of non-manufactured wood shall be heat-treated. The quality mark shall be placed on both ends of the outer packaging, between the end cleats or end battens, on two sides of the pallet. See 6.3.

5.4 Hydraulic system. The hydraulic system shall be filled to the operating level with the manufacturer's normal hydraulic fluid and sealed to prevent leakage. If the unit cannot be shipped with the hydraulic system filled, then the fluid shall be placed in a can and sent with the unit. A tag shall be placed in a conspicuous place warning the user that the system needs to be filled prior to operation of the unit. Hose openings not attached or in use shall be sealed.

5.5 Attachments. All attachments shall be preserved the same as the basic unit.

5.6 Electrical. Electrics not inherently fungus and moisture resistant shall be treated to be fungus and moisture resistant.

5.7 Palletization. Shipments to the same destination of identical items having a total packaged displacement exceeding 50 cubic feet shall be palletized unless forklift-handling features such as skids are included on containers.

5.8 Workmanship. Workmanship shall be such that when proper procedure is followed, materials and equipment being processed will be provided the maximum protection against corrosion, deterioration, and be suitable for storage to the level of packaging specified.

5.9 Marking Requirements.

5.9.1 Multiple containers. If the items are packaged in more than one box, the boxes shall be marked i.e., 1 of 3, 2 of 3, 3 of 3 etc.

5.9.2 Loader marking. Vehicle markings shall be in capital letters of equal height, shall be proportionate to the available marking space, and shall contain the following information (if applicable) in the order listed. This information shall be placed on a tag and secured to the rear of the vehicle or on the right side of the vehicle near the rear with tape conforming to ASTM D 5486, type III, class 2.

- a. Control number or reference number (as a minimum, the Transportation Control Number (TCN) shall be provided as the single standard shipment identification Number.)
- b. Name and address of the contractor (including nine-digit zip code). When supplies are shipped from a subcontractor, only the name and address of the company awarded the contract shall be used.
- c. Name and address of consignee (DOD Activity Address Code (DODAAC) and in the clear address if applicable.
- d. NSN/NATO stock number: 3805-01-496-0377.
- e. CAGE code of the company awarded the contract, and part number of the item as specified in the contract.
- f. Contract or purchase order number.

5.9.3 Attachment marking. Markings for the attachments shall be grouped into three distinct categories, identification markings, contract data markings and address markings.

5.9.3.1 Identification Markings.

- a. NSN/NATO stock number.
- b. CAGE code of the company awarded the contract, and part number of the item as specified in the contract.
- c. Quantity and unit of issue.
- d. Level of protection and date packed.
- e. Gross weight and cube.
- f. Item description or nomenclature.

5.9.3.2 Contract Data Marking. As applicable, the contract data marking, placed under the identification markings, shall consist of the contract or purchase order number.

5.9.3.3 Address Markings. The address markings, placed to the right of the identification and contract data markings (if space is available) shall consist of the following information in the order shown.

- a. Control number or reference number (as a minimum, the Transportation Control Number (TCN) shall be provided as the single standard shipment identification number)
- b. FROM MILITARY: Name and address of consignor (DOD Activity Address Code) and in the clear address if applicable.
- c. FROM CONTRACTOR: Name and address of the contractor (including nine-digit zip code). When supplies are shipped from a subcontractor, only the name and address of the company awarded the contract shall be used.
- d. TO: Name and address of consignee (DOD Activity Address Code (DODAAC) and in the clear Address if applicable.
- e. Piece number and total pieces (if more than one shipping container is used for the order).

5.9.3.4 Bar coding. In addition to the above information, the NSN/NATO stock number shall be bar coded on the unit packs and intermediate containers. The following shall be bar coded on the shipping container. All bar coding shall use the 3 of 9 format in accordance with AIM BC1.

NSN/NATO stock number: 3805-01-496-0377

Contract or order number.

CAGE code of the company awarded the contract.

Contract Line Item Number (CLIN) if applicable.

6 NOTES

(This section contains information of a general or explanatory nature, which may be helpful, but is not mandatory.)

6.1 Definitions.

6.1.1 Skid loader or skid steer loader. A skid steer loader is a self-propelled machine that is steered by using variation of speed and and/or direction of rotation between wheels on fixed axles on opposite sides of the machine. It is designed primarily to do work by attachments or implements fastened to a lift arm or chassis. Normal entry to and exit from the operator compartment is over the front attachment point.

6.1.2 Operating weight. The weight of the loader with operator (75 kg, 165 lbs), full fuel tank and all other fluid compartments at the manufacturer's specified level. The operating weight does not include attachments and the tire fill.

6.2 References.

DOD-HDBK-743

- Anthropometry of US Military Personnel

MIL-HDBK-759

- Human Engineering Design Guidelines

MIL-HDBK-1791 - Designing For Internal Aerial Delivery In Fixed Wing Aircraft

6.3 Pinewood Nematode. Based upon concern about invasive species, particularly the Pinewood Nematode, the European Community issued an Emergency Decision on March 12, 2001, to regulate non-manufactured wood products shipped into Europe. See http://europa.eu.int/eur-lex/pri/en/oj/dat/2001/l_081/l_08120010321en00390041.pdf.

6.4 Transportability analysis aids. Transportability analysis aids are available at the Military Traffic Management Command's Transportability Engineering Agency website at <http://www.tea.army.mil>. Some of the available tools are the Intelligent Rail Impact Predicting Tool, and the Virtual Proving Ground for Transportability Analysis (VPG-T). The transportability analysis may also be submitted on line.

6.5 Human Physical Dimensions. For general design guidance, see dimensions for the standing body, seated body, depth and breadth, circumferences and surfaces, hands and feet, and head and face in MIL-HDBK-759. MIL-HDBK-743 should be consulted for more extensive data. SAE J833 and ISO 3411 also offer guidance to human physical dimensions.

6.6 Helicopter sling loading mission profile. Each helicopter has a maximum payload rating; however, the lift capability and range of each helicopter differ for each mission. Temperature and altitude influence the weight that a helicopter can carry. It is desired that the loader's weight for helicopter sling loading be limited to achieve the target mission, which is to transport the loader for 30 nautical miles at 4000 feet altitude at a temperature of 95° Fahrenheit.